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SUBJECT: Optical Resolution of the Prototype Advanced Stereo Rhomboid, Model II

a. The resolution of optics mounted on a light table is strongly affected by vibration. These resolution values are similar to the reportings during the T&E period of the prototype Advanced Stereo Rhomboid

b. The 10S, or tilting eyepiece, is appreciably poorer than the 15X or 20X eyepieces used.

c. As vibration is increasingly isolated, the resolution of the rhomboids increases. With the 1X rhomboid objectives, resolution is achieved that is one resolution target step below the resolution of the stereoscope alone.

d. Rotation of the Pechan prism that affects image rotation has an effect on resolution.

e. Optical misalignment of the rhomboids with the stereoscope does not apparently cause any serious degradation of resolution. Resolution did not appreciably vary with use of the 1186TA pod, which was reportedly aligned to the stereoscope, and with use of the 280BF pod which was not aligned. However, this misalignment may affect other optical parameters.

f. Resolution did not increase dramatically when the optics were hard mounted on the air bearing optics bench. However, the confidence level in reading increased and more observations were made at the higher of two levels previously observed on the steel surface plate.

5. The resolution data substantiate the results of the [redacted] reevaluation as reported in their letter of 12 August 1970.

6. With all of the rhomboid objectives, resolution is achieved that is one resolution target step below the objectives for the prototype development. The next step on the resolution target is above the development objectives and equals the resolution achieved by the stereoscopes without the rhomboids attached.

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7. The prototype Advanced Stereo Rhomboid has previously been determined to be an acceptable instrument in all major objectives except for resolution. These resolution data indicate that the instrument is also acceptable with respect to resolution achieved.

[Redacted]
Project Monitor
TSG/RED/SDB

Attachments:

1. [Redacted] Letter
(dated 12 Aug. 70)
2. Document dated 31 Aug. - 1 Sept. 70

Distribution:

Original - Route & File
1 - Chief/IEG (Attn: [Redacted])
1 - Chief/TSG/ESD
1 - Chief/IAS (Attn: [Redacted])
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